may be the same or different and m and n independently are 1, 2, 3 or 4, with the proviso that the bilateral symmetry is maintained; R" is a structural bridge between X and the ($C_4R'_mC_5C_4R'_n$) ring to impart stereorigidity; Q is a hydrocarbyl radical having 1-20 carbon atoms or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; and Me can be in any of its theoretically possible oxidation states;

b) introducing the catalyst into a polymerization reaction zone containing an olefin monomer and maintaining the reaction zone under polymerization reaction conditions to produce a syndiotactic atactic block polymer; and

c) recovering said syndiotactic/atactic block polymer from said polymerization reaction zone.

15. **(New)** The process of claim 14, wherein the heteroatom ligand of said catalyst is selected from the group consisting of N, P, O and S.

16. **(New)** The process of claim 15, wherein Me is selected from the group consisting of Ti, Zr and Hf.

17. **(New)** The process of claim 16, wherein the R" is a silyl or hydrocarbyl biradical having at least one silicon or carbon atom to form the bridge.

18. **(New)** The process of claim 17, wherein R" is dimethylsilyl.

19. **(New)** The process of claim 14, wherein said monomer is propylene and said reaction zone is operated under polymerization conditions to produce a syndiotactic/atactic block polypropylene.

20. **(New)** The process of claim 15 wherein said syndiotactic/atactic block polypropylene, comprises alternating blocks of syndiotactic and atactic sequences in which the syndiotactic sequences are longer than the atactic sequences.

21. **(New)** The process of claim 20 wherein said syndiotactic/atactic block polypropylene, contains at least 70% syndiotactic triads.

22. **(New)** The process of claim 19 wherein said syndiotactic/atactic block polypropylene, is elastomeric.

23. **(New)** The process of claim 19 wherein said polymerization conditions include a first polymerization temperature and further comprising changing the polymerization temperature to a higher value to provide a syndiotactic/atactic block polypropylene having a decreased syndiotactic/atactic ratio relative to the syndiotactic/atactic ratio produced at said first lower polymerization temperature.

24. **(New)** The process of claim 19 wherein R" is a diphenyl silyl bridge and wherein said polymerization reaction zone is operated under conditions to produce a syndiotactic/atactic block, polypropylene, having a higher molecular weight than the molecular weight produced by a catalyst having a dimethylsilyl structural bridge.

25. **(New)** A syndiotactic/atactic block homopolymer of an α-olefin having at least 3 carbon atoms produced by polymerizing said α-olefin in the presence of a catalyst of the general formula:

$$R''(C_4R'_mC_5C_4R'_n)XMeQ$$

wherein X is an hetero-atom ligand with one or two lone pair electrons selected from the elements of Group VA or VIA which can be substituted or non-substituted: $(C_4R_m'C_5C_4R_n')$ is a symmetrically substituted, 3,6-substituted fluorenyl; R' is hydrogen or hydrocarbyl radical

having from 1-20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino or alkylsilyl radical, each R' may be the same or different and m and n independently are 1, 2, 3 or 4, with the proviso that the bilateral symmetry is maintained; R" is a structural bridge between X and the ($C_4R'_mC_5C_4R'_n$) ring to impart stereorigidity; Q is a hydrocarbyl radical having 1-20 carbon atoms or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; and Me can be in any of its theoretically possible oxidation states.

26. **(New)** The homopolymer of claim 25, wherein said α-olefin is propylene and said homopolymer is a syndiotactic/atactic block polypropylene.

27. **(New)** The homopolymer of claim 26 wherein said syndiotactic/atactic block polypropylene, comprises alternating blocks of syndiotactic and atactic sequences in which the syndiotactic sequences are longer than the atactic sequences.

28. **(New)** The homopolymer of claim 27 wherein said syndiotactic/atactic block polypropylene, contains at least 70% syndiotactic triads.

29. **(New)** The homopolymer of claim 28 wherein said syndiotactic/atactic block polypropylene, is elastomeric.

30. **(New)** A syndiotactic/atactic block copolymer of at least two α-olefin monomers produced by polymerizing said α-olefin monomers in the presence of a catalyst of the general formula:

$$R''(C_4R'_mC_5C_4R'_n)XMeQ$$

wherein X is an hetero-atom ligand with one or two lone pair electrons selected from the elements of Group VA or VIA which can be substituted or non-substituted: ($C_4R_m'C_5C_4R_n'$) is a symmetrically substituted, 3,6-substituted fluorenyl; R' is hydrogen or hydrocarbyl radical having from 1-20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino or

alkylsilyl radical, each R' may be the same or different and m and n independently are 1, 2, 3 or 4, with the proviso that the bilateral symmetry is maintained; R" is a structural bridge between X and the ($C_4R'_mC_5C_4R'_n$) ring to impart stereorigidity; Q is a hydrocarbyl radical having 1-20 carbon atoms or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; and Me can be in any of its theoretically possible oxidation states.

31. **(New)** The copolymer of claim 30 wherein one of said α-olefin monomers is propylene.